EXAMINATION NO.: _____

THE MALAWI NATIONAL EXAMINATIONS BOARD

2026 MALAWI SCHOOL CERTIFICATE OF EDUCATION EXAMINATION

BIOLOGY

Subject Number: M022/I

Tuesday, 30 June

Time Allowed: 2 hours
8:00 – 10:00 am

PAPER I

Theory

(100 marks)

Instructions:

1. **This paper contains 12 printed pages. Please check.**
2. **Write** your **Examination Number** at the top of each page of this question paper.
3. This paper has **two** sections, **A** and **B**. Answer **all** the questions in **both** sections in the spaces provided.
4. The maximum number of marks for each answer is indicated against each question.
5. In the table provided on this page, **tick** against the question number if answered.
6. At the end of the examination, hand in your paper to the invigilator when time is called to stop writing.

Question Number	Tick if answered	Do not write in these columns	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
	Total		

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Section A (70 marks)

Answer **all** the questions in this section in the spaces provided.

1. a. Mention any **one** fin that controls pitching in fish.

_____

(1 mark)

b. Explain any **one** way in which secretion of proteases in inactive form along the alimentary canal is important.

_____

_____

(2 marks)

c. Explain any **one** way in which under developed air sacs would affect flying in birds.

_____

_____

(2 marks)

d. Name any **two** forces which help in the movement of water through xylem vessels.

_____

_____

_____

(2 marks)

2. a. Describe the effect of low light intensity on the rate of transpiration.

_____

_____

_____

(3 marks)

b. Explain any **two** impacts of climate change on terrestrial environments.

_____

_____

_____

_____

_____

(4 marks)

Continued/...

3. a. Explain any **one** positive effect of rainfall on the distribution of organisms in an ecosystem.

_____

_____

_____

(2 marks)

b. In an attempt to estimate the population of mice in a school garden, 34 mice were captured, marked and released. Three days later, 45 were captured, of which 30 were marked.

(i) Name the sampling method used in estimating the population of mice.

_____

(1 mark)

(ii) Calculate the approximate population of mice in the school garden.

(3 marks)

c. Mention any **one** way in which genetic engineering is applied in medicine.

_____

_____

(1 mark)

Continued/...

4. a. Mention any **two** compositional differences between blood in the umbilical artery and that in umbilical vein.

_____

_____

_____

_____

_____

(2 marks)

b. **Figure 1** is a diagram showing part of the human respiratory tract.

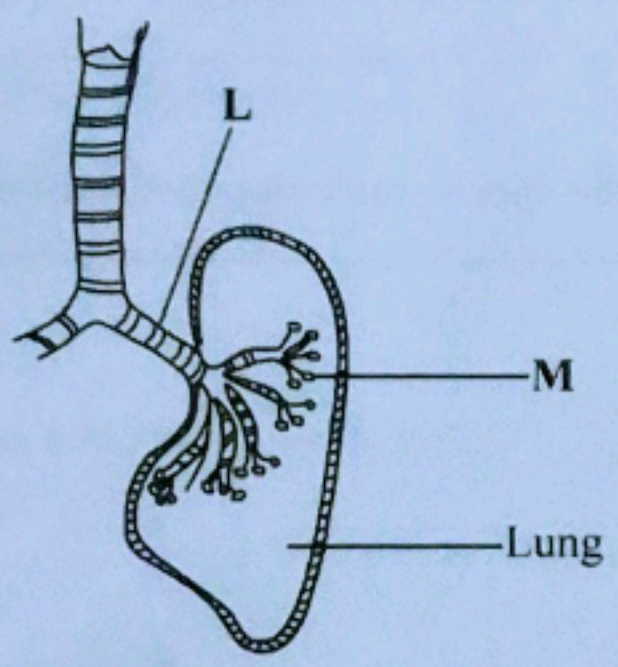

Figure 1

(i) Identify the part labelled **L**.

_____

(1 mark)

(ii) Explain any **two** adaptations of the part labelled **M** to its function.

_____

_____

_____

_____

_____

(4 marks)

Continued/…

5. a. Mention any **one** way in which negative geotropism in plants is important.

_____

_____

(1 mark)

b. **Figure 2** is a diagram showing a transverse section of a dicotyledonous stem.

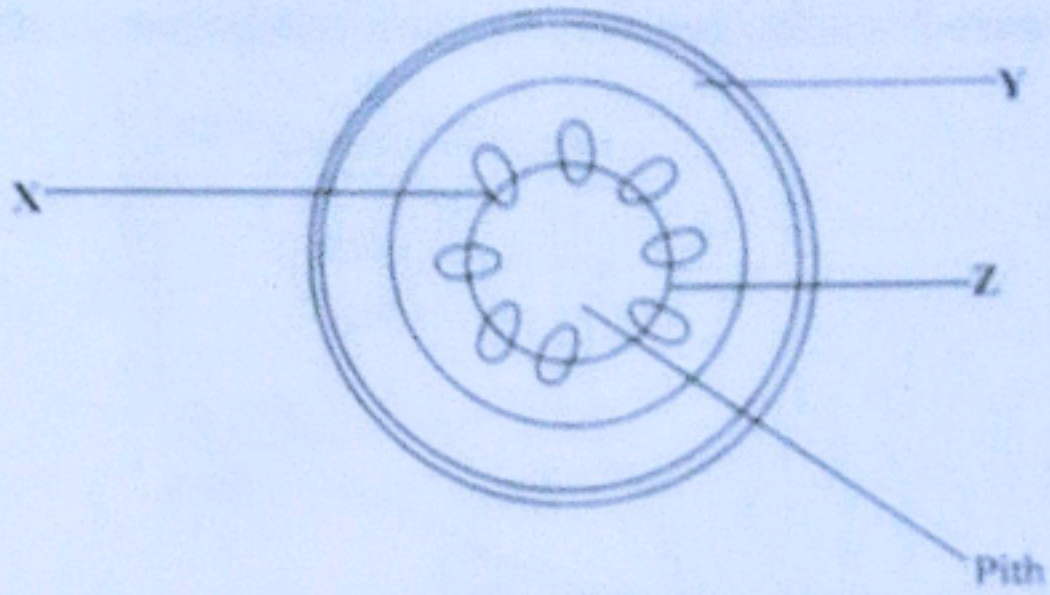

Figure 2

(i) Name the parts labelled **X** and **Z**.

X _____

(1 mark)

Z _____

(1 mark)

(ii) Mention any **one** substance that is stored in the part labelled **Y**.

_____

(1 mark)

(iii) Explain any **one** way in which the part labelled **X** supports a plant.

_____

_____

_____

(2 marks)

c. Give the function of ribosomes in a plant cell.

_____

_____

(1 mark)

Continued/...

6. a. Describe any **one** way in which nitrogen is recycled back to the atmosphere.

_____

_____

_____

(2 marks)

b. **Figure 3** is a diagram showing parts of a human circulatory system.

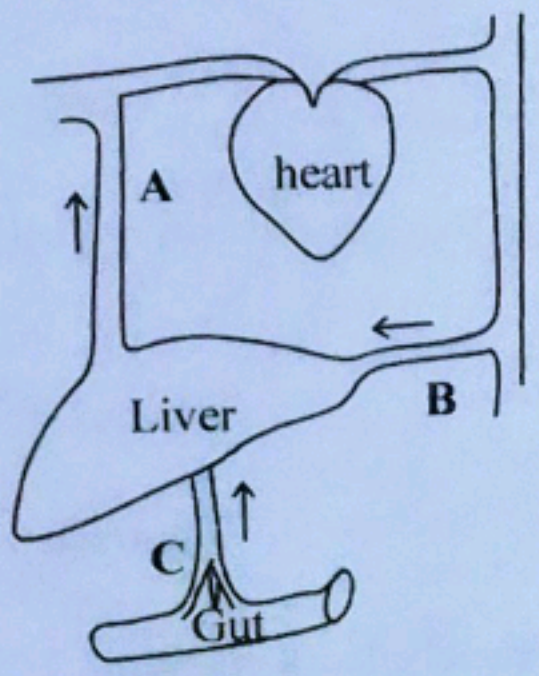

Figure 3

(i) Using letters **A**, **B** and **C**, identify the blood vessel which has the following:

1. high blood pressure.

_____

(1 mark)

2. highest concentration of urea.

_____

(1 mark)

(ii) Explain any **one** way in which the level of blood sugar in vessel **A** would be higher than in vessel **C** during starvation.

_____

_____

_____

_____

_____

(3 marks)

Continued/…

7. a. Mention the **two** hormones involved in osmoregulation in a human body.

_____

_____

(2 marks)

b. Describe any **one** way in which natural selection might have contributed to the extinction of light-coloured moths in a soot polluted environment.

_____

_____

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_____

_____

(3 marks)

c. Explain the role of corpus luteum in the human reproductive system.

_____

_____

_____

(2 marks)

8. a. Describe any **two** characteristics of mammals.

_____

_____

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_____

(4 marks)

b. Describe any **one** effect of transferring rhesus positive blood into the body of a recipient with rhesus negative blood.

_____

_____

_____

_____

(3 marks)

Continued/...

9. a. Mention any **two** effects of chromosomal mutations.

_____

_____

_____

_____

(2 marks)

b. **Figure 4** is a diagram showing a cell undergoing cell division.

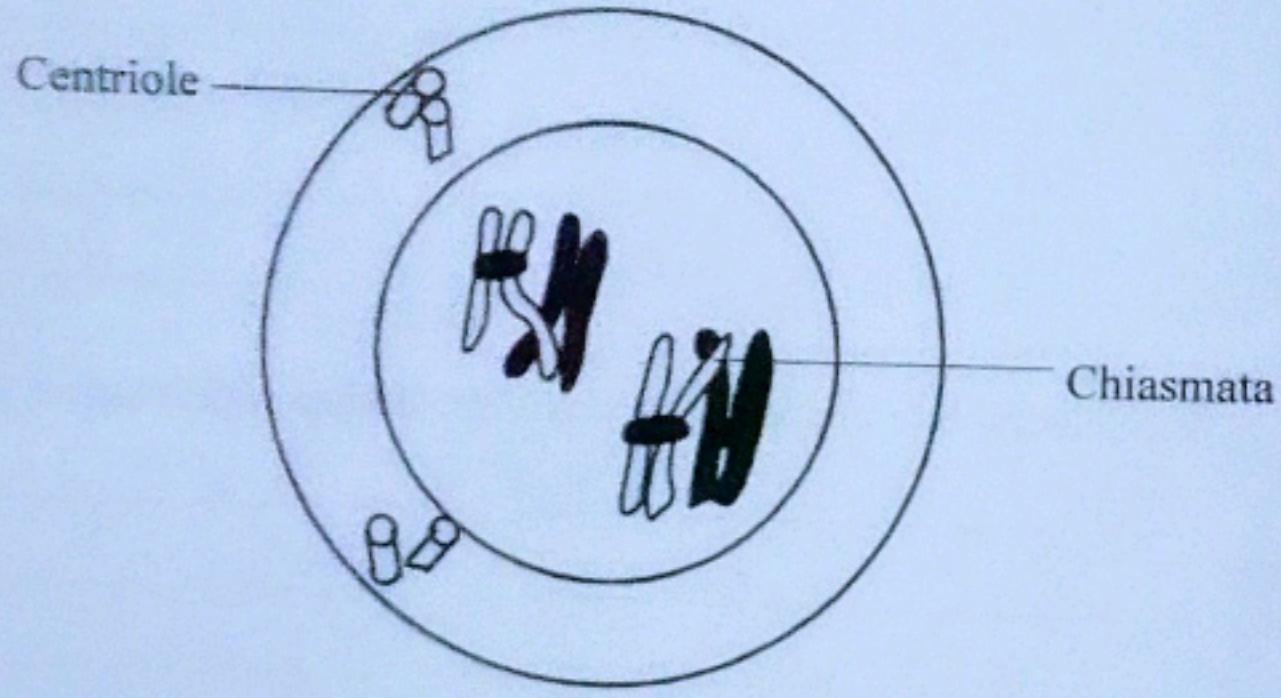

Figure 4

(i) Identify the stage of cell division at which the cell was observed.

_____

(1 mark)

(ii) Mention the main process which occurs during the stage of cell division.

_____

(1 mark)

(iii) Explain any **one** way in which the process occurring in the cell brings about variations in organisms.

_____

_____

_____

_____

(3 marks)

Continued/...

10. a. Explain any **one** way in which embryology could be used as evidence of evolution.

_____

_____

(2 marks)

b. A child received a tetanus vaccine immediately it was born in order to protect it from the disease.

(i) Name the substance that was injected into the child's body.

_____

(1 mark)

(ii) Mention the type of immunity that would be acquired by the child.

_____

(1 mark)

(iii) Describe any **one** way in which the substance injected in the child is prepared.

_____

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_____

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_____

(3 marks)

Continued/…

Section B (30 marks)

Answer **all** the **three** questions in this section in the spaces provided. Your answers should be in an essay form.

11. Explain the function of any **five** parts of a human nephron.

(10 marks)

Continued/…

12. Explain any **five** healthy lifestyles that would help reduce the risk of cancer in a human body.

(10 marks)

Continued/...

13. Describe the mechanism of a reflex action associated with the production of tears when peeling a fresh lemon.

(10 marks)

END OF QUESTION PAPER

NB: This paper contains 12 printed pages.